Toolkit for Risk-based
pensions supervision

Module 0
Introduction to
Risk-based Pensions Supervision

Introductory note

Risk-based Pensions Supervision provides a structured approach focusing on identifying potential risks faced by pension funds and assessing the financial and operational factors in place to mitigate those risks. This process then allows the supervisory authority to direct its resources towards the issues and institutions which pose the greatest threat.

The IOPS Toolkit for Risk-based Pensions Supervisors provides a 5-module framework for pensions supervisors looking to apply a system of risk-based supervision. A web-based format allows: a flexible approach to providing updates and additions; users to download each module separately as required; and a portal offering users more detailed resources, case studies and guidance. The website is accessible at www.iopsweb.org/rbstoolkit.

This document contains the **Introduction to the IOPS Toolkit for Risk-based Supervision.**

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1. What is Risk-based Supervision?

As reflected in the IOPS by-laws, supervision mainly involves issues related to the organisation, structure and functions of the supervisory body, the development of proper supervisory techniques and the implementation of enforceable regulations by supervisory bodies.

Risk-based supervision (RBS) is a structured approach which focuses on the identification of potential risks faced by pension plans or funds[1] and the assessment of the financial and operational factors in place to manage and mitigate those risks. This process then allows the supervisory authority[2] to direct its resources towards the issues and institutions which pose the greatest threat.

Given their limited resources, all supervisory authorities have to focus their attention in some way. What RBS does is to make this process explicit rather than implicit, formal rather than ad hoc. Under RBS, supervisory resources and attention follow identified risks in a forward looking fashion – rather than, for example, concentrating on institutions which have broken certain rules, or by following up on complaints. The key to RBS is identifying where problems are going to occur in the future and not just looking at where they have happened in the past. Current compliance with regulatory requirements - although necessary - might not be sufficient to provide evidence that risks are being kept at or below a satisfactory level. Hence RBS is not just about checking that entities are complying with rules, but seeing if the way in which they are doing so means that risks are being mitigated properly and will continue to be so in future (even under adverse circumstances).

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[1] According to the OECD's taxonomy (OECD 2005), a pension fund is a legally separated pool of assets forming an independent legal entity that is bought with the contributions to a pension plan for the exclusive purpose of financing pension plan benefits. The plan/fund members have a legal or beneficial right or some other contractual claim against the assets of the pension fund. Pension funds take the form of either a special purpose entity with legal capacity (such as a trust, foundation, or corporate entity) or a legally separated fund without legal capacity managed by a dedicated provider (pension fund management company) or other financial institution on behalf of the plan/fund members.

A pension plan is a legally binding contract having an explicit retirement objective (or – in order to satisfy tax-related conditions or contract provisions – the benefits cannot be paid at all or without a significant penalty unless the beneficiary is older than a legally defined retirement age). This contract may be part of a broader employment contract, it may be set forth in the plan rules or documents, or it may be required by law. In addition to having an explicit retirement objective, pension plans may offer additional benefits, such as disability, sickness, and survivors' benefits.

In EU countries, this module may not apply to those pension funds and pension plans that fall outside the scope of the EU Directive 2003/41/EC of the European Parliament and of the Council of 3 June 2003 on the activities and supervision of institutions for occupational retirement provision, e.g. pensions funded via book reserves.

[2] Pension supervisory authorities referred to in the IOPS Toolkit for Risk-based Supervision are defined as any entity responsible in whole or in part for the supervision of pension funds, plans, schemes or arrangements in a country, or the subdivision of a country, whether invested with its own personality or not.

This means that supervisory resources will not be allocated evenly across all supervised entities, but will follow those identified as potentially posing the greatest threat to the goals which the supervisory authority is trying to achieve. A risk-based approach attempts to quickly determine which pension funds are in a satisfactory state, and which require more attention. Supervisory authorities then spend the minimal amount of effort on the plans that are determined to pose the least threat and to have little impact should problems occur, and concentrate on the funds needing more attention.

Though more challenging to implement, this has a number of advantages, for example:

- it maximises the use of scarce regulatory resources;

- it increases the probability that significant problems will be spotted in a timely fashion and remedied in the most effective manner; and

- it encourages pension funds to run their business well, so they receive minimum attention from the supervisory authorities.

RBS can be applied in many different ways, making it adaptable to different market situations (including for more developing pension systems) and supervisory philosophies. For example, RBS may involve detailed quantitative measures of risk, or more qualitative judgements about risk management. It may result in detailed risk-scores being produced for each entity which the supervisory authority oversees, or it can be used to analyse risks which are systemic to the pension system. It can help identify weak areas within a supervised entity or to establish which entities amongst thousands may pose the greatest threat.

However, certain elements can be identified which are common to all RBS systems. First, they require a determination by the supervisory authority of its objectives and identification of the risks to their achievement. Second, a risk-based approach involves an assessment of the hazard or adverse events, and the likelihood of these occurring. Third, supervisors assign scores and / or ranks to firms or activities on the basis of these assessments. Finally a risk-based approach provides a means of linking the organisation and application of supervisory, inspection and often enforcement resources to the risk scores assigned to individual entities or system-wide issues.

Moving towards RBS is often accompanied by the deregulation of strict rules and a move towards a more 'prudential' approach to regulation, applying more high level principles.[3] Yet RBS can be applied whether a rules-based or a principles-based form of regulation is in place. There is no one, perfectly deregulated model which all countries should be striving towards. Some systems (*e.g.* mandatory systems) requiring greater levels of protection are likely to apply more comprehensive rules than others.
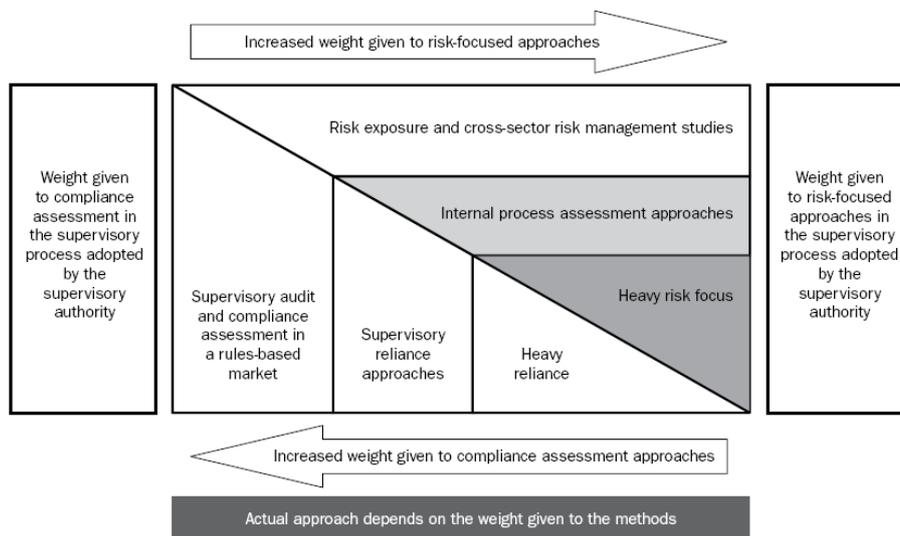
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[3] According to Smith (2007), principles-based regulation means: "*moving away from reliance on detailed, prescriptive rules and relying more on high level principles to set the standards by which regulated firms must conduct business.*"

Black (2008b) outlines how detailed rules need not be banished from a principles based system of regulation. Rather a 'tiered approach' should be adopted, with principles under-pinned by detailed rules in some areas, and detailed rules in turn requiring the support and coverage of principles. However, the paper also outlines that 'principles-based' regulation requires a certain level of 'responsibility, mutuality and trust' between the regulator and regulated community to work. See also (Smith 2007) (Hutter 2005).

[4] Whether risk is controlled via rules or via prudential regulations simply changes the nature and focus of the supervisory approach.[5]

Likewise, there is no need for an either / or choice between RBS and a more traditional or rules-based supervisory approach (*i.e.* simply checking for compliance with regulations). RBS does not mean having no rules or compliance procedures in place. The move towards risk-based supervision can be seen as a movement along a continuum from one extreme of complete reliance on a rules-based system to one where the emphasis of supervision is a function or risk. Both methods can and should be blended according to the nature of the pension system which is being overseen. The key is to find the mix which is most appropriate according to the nature of the pension system, the capacity of the supervisory authority, and the level of development of the pension industry. The International Association of Insurance Supervisors (IAIS) has outlined the evolution to a risk-based approach to supervision as follows:

Figure 1: Range of Supervisory Approaches

Source: IAIS ICP4 Supervisory Process, 2006.

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[4] Indeed reviews of the 2008/2009 financial crisis have stressed the importance of rules in backing up and supporting a risk-based approach. "*Supervisory discretion has to be constrained by a rules-based framework so that supervisors can blame the rules as they try to take the punchbowl away when the party gets going.*" Taken from the report of the Warwick Commission, 'International Financial Regulation: In Praise of an Unlevel Playing Field.' http://www2.warwick.ac.uk/research/warwickcommission/

[5] For example, when it comes to the oversight of investment risk, relying on the 'prudent person principle' necessitates a different approach from enforcing quantified limits – with a focus on the investment processes and risk management systems of the pension funds themselves, rather than checking for breaches of the limits. Where quantitative investment limits are applied, compliance with these regulations will be built into the overall risk analysis. Alternatively, where risk-based measures (such as VaR) are used by the supervisory authority to control investment risk, the results of these stress tests are the backbone of the risk-based approach.

Consequently, a fully developed system of RBS does not have to be introduced in one step – rather there can be a gradual move from a 'rules' to a risk-based approach, which can take several years. For example, in general, in the early stage of pension market development, the supervisory authority may be more likely to rely on comprehensive rules with which entities comply – and consequently much of its supervisory attention will be focused on ensuring that the rules are applied. As the market grows and the level of expertise within each pension fund and within the supervisory authority increases, more discretion may be built into the system, enabling pension funds to apply their judgment and experience in most areas. With more freedom of action and decision making comes more responsibility. Hence it follows that as the market develops, the authority can be less prescriptive - relying less on detailed regulation and more on principles-based regulation and guidance - and will look more to pension funds themselves for robust risk management, internal control and compliance monitoring procedures (though during the transition period, it is important for the authority to be vigilant for increases in the level of risk accepted by pension funds without proper risk management processes).

Whatever the challenges and level of development, IOPS members that have made the move to RBS stress that it is worthwhile. For a given level of resources, a well-applied system of RBS will always be more efficient and manage risk better than a more traditional, rules-based approach. The message from IOPS members is that RBS should be rolled out gradually – with the amount of preparation required by the supervisory authority and by industry determining the balance between a risk and rules based approach.

Specificities of RBS for Pensions

RBS developed in the banking and insurance sectors - under the Basel II and Solvency II frameworks of the Basel Committee on Banking Supervision (BCBS) and the European Commission[6] -responding to the need to supervise increasingly complex financial markets efficiently and effectively, and following developments within financial institutions own risk-management frameworks.
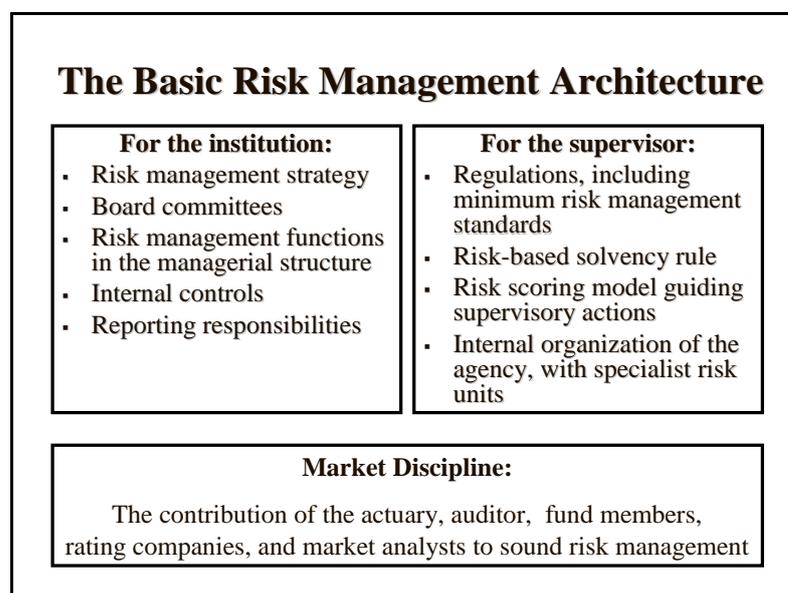
The RBS processes for these sectors were set up under a 'three pillar' framework:

- *Pillar 1:* Quantitative Requirements (*i.e.* risk-based solvency rules);

- *Pillar 2*: Supervisory Response Process (focusing on the risk-management of the supervised entities);

- *Pillar 3:* Market Discipline (involving enhanced disclosure and transparency).

The move towards RBS in the pension sector has been more recent than for other financial institutions, and the risk-based framework has had to be adapted. The World Bank's outline of RBS for pensions is as follows:

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[6]For details see http://www.bis.org/publ/bcbsca.htm. and http://ec.europa.eu/internal_market/insurance/solvency/background_en.htm#sol2 It should be noted that Basel II was under revision at the time of writing.

The move to a greater focus on risk has since been adopted and promoted by other international financial sector supervisory organizations, including the International Organization of Securities Commissions (IOSCO), the International Association of Insurance Supervisors (IAIS) – see (IAIS 2006).

Figure 2: Risk-management Architecture for Pensions

The Basic Risk Management Architecture

For the institution:
- Risk management strategy
- Board committees
- Risk management functions in the managerial structure
- Internal controls
- Reporting responsibilities

For the supervisor:
- Regulations, including minimum risk management standards
- Risk-based solvency rule
- Risk scoring model guiding supervisory actions
- Internal organization of the agency, with specialist risk units

Market Discipline:

The contribution of the actuary, auditor, fund members, rating companies, and market analysts to sound risk management

Source: World Bank (See Brunner et al, 2008)

One difference between RBS of pensions vs. other financial sectors is that wider risk consideration may be required, given the range of players involved in pension provisioning - from sponsors to trustees to asset managers etc.[7] Outsourcing risk may be higher for pension funds as they (particularly smaller funds) may rely more on external service providers than other financial institutions in many countries. Risk-based supervision for pensions will have to focus on different issues from the rest of the financial sector if pension funds are non-profit organisations (*e.g.* ensuring that lay trustees and fiduciaries are capable of performing their role adequately).

Sheer volume can present problems too. Most bank and insurance supervisors aim to visit all supervised institutions, probably annually for the systemically important ones and/ or those that imply the greatest risks, on say a five year cycle for less risky ones. This is impossible for some pension supervisory authorities who have to oversee tens of thousands of pension funds, and instead sampling mechanisms will have to be used. Efficient handling of data submissions from such a number of entities is also a challenge for pension supervisors.

With regards to funding and solvency issues, different calculations may have to be considered regarding pension funds as capital support may come from a sponsor rather than from the pension fund itself (though the soundness of the plan sponsor can be a difficult issue for pension supervisory authorities to judge), or indeed, with defined contribution (DC) funds, capital support is not an issue where guarantees are not provided and individual fund members bear the risks themselves. In addition, whether (and if so how) to apply the same risk-based solvency requirements to pensions is a topic of much debate. Such considerations are less applicable to DC style pension funds than other financial

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[7] http://www.globalriskregulator.com/archive/April2005-20.html

institutions as they may not directly provide any financial guarantees (see Module 2 of the IOPS Toolkit for further discussion of these topics).

In some cases pension supervisors applying risk-based supervision have a different approach to overseeing market discipline and market risk than other financial authorities - often due to the mandatory nature of the pension system. Such systems may require extra levels of protection, given their mass membership (covering those with low incomes and low levels of financial understanding), and that they are often effectively or explicitly part of social security, which means that there is a large public policy (and media) impact if something goes wrong, along with an explicit and an implicit fiscal liability for the government. Market discipline may be considered to be insufficient on its own, and strong safeguards with intensive supervision are therefore required. By way of contrast, voluntary pension systems in more developed market economies rely more on the risk management of the pension funds themselves. Product design, such as portfolio choice and default options tend to be less regulated in voluntary systems. If the market is operating more openly, transparency issues, misselling problems, information provision and cost control will be major issues on the supervisor's radar.

Consequently, how to apply RBS differs not only between pensions and other financial sectors, but also between different types of pension system as well. There is great heterogeneity in pension systems between countries, and within pension systems there may be a significant variety of pension types, all which makes the application of RBS particularly challenging for pension supervisors.[8]

For example, risk-based supervisors will have a different focus whether overseeing defined benefit (DB) or defined contribution (DC) pension funds. Risk-based supervision for DB systems focuses on the sponsor and/or the solvency of the fund, assessing whether promised benefits will be met in future. With DC pensions, risks to individual plan members are key as they largely bear the risks of these funds directly themselves. This is further magnified by the limited capacity of individuals to understand and manage such risks, particularly where they are empowered to make choices themselves.[9] Such issues therefore need to be given more weight in risk-based frameworks which oversee DC funds. Supervisors will need to focus more on inadequate member disclosure and understanding, poor investment returns and higher costs and possibly the payout phase.[10]

2. Why Adopt Risk-based Supervision?

Before launching into a Toolkit outlining the "how" of RBS, it is useful in this introduction to reflect first on the question of "why". Implementing risk-based supervision comes with some potentially significant initial and ongoing costs in terms of supervisory resources. It means fundamental changes in the processes employed by the supervisor, the skills required of its staff, and the manner in which the supervisor interacts with both the financial institutions and other supervisors. Is all of this likely to be worthwhile in helping the supervisory authority to meet its mandate effectively and efficiently?

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[8] A very comprehensive overview of occupational pension plans can be found in '*Complementary and Private Pensions throughout the World 2008'* (OECD/ISSA/IOPS 2008). Country profiles of IOPS members are available on the IOPS website www.iopsweb.org

[9] See Impavido et al (2009).

[10] The supervision of DC pension funds is covered in depth in IOPS Working Paper No. 12 (IOPS 2010a). See also Module 3.

Not only does a sound understanding of the motivation for adopting RBS outline the advantages of such an approach, but also helps a pension supervisory authority to shape its managerial and structural response, and ensures that the authority is fully aware of the challenges that lie ahead.

Common core motivations for adopting RBS include:

- To improve supervisory effectiveness by using scare resources more efficiently;

- To address internal organisational concerns (*e.g.* when establishing an integrated financial authority);

- To adapt to changes / developments in the overseen industry;

- To gain legitimacy following supervisory failure;

- To meet requirements imposed by legislation; and

- To adapt to the changing nature of financial risks themselves, as these become more complex and - with the growth of DC pension systems - are increasingly transferred to individuals.

The work of the World Bank (Brunner et al 2008) and IOPS (IOPS 2007) identify similar motivations for pension supervisory authorities which have moved towards a risk-based approach. For example, dealing with the underfunding of DB funds was a major driver for the adoption of RBS in the Netherlands (after contribution holidays following the equity boom of the 1990s led to deficits on the fall of equity markets around the Millennium). RBS was introduced in conjunction with more liberal investment regulation in the Denmark and Mexico, whilst the move by the Australian Prudential Regulation Authority (APRA) in Australia and BaFin in Germany was driven by the establishment of an integrated supervisory authority, whilst in the United Kingdom, RBS was introduced in 2005 following a government review of the previous pension supervisor authority (OPRA) which led to the creation of a new risk-based regulator (The Pensions Regulator – TPR). Furthermore, BaFin introduced RBS for Pensionsfonds and Pensionskassen in conjunction with the development and implementation of Solvency II for insurers and the strengthening of supervisory efficiency.

While each of these factors may play a role in practice, the second motivation shown in Table 1 – improving supervisory efficiency - must be the dominant motivation if RBS is to succeed. Supervised entities must see this as a "win-win" situation (especially if costs of supervision are charged back to them), not just the imposition of a further - and perhaps more complex - set of rules on the top of the current one, otherwise support from the pension industry will not be forthcoming. RBS offers supervisors the ability to target their resources toward the financial institutions and issues of greatest concern, reducing the net risk to individuals and the financial system as a whole. In turn, it also offers financial institutions the possibility of obtaining value-added feedback from their supervisor – directing them toward more effective management of significant risks. With the necessary legal powers and adequate time and resources, the implementation of risk-based supervision can be successful and this win-win proposition achieved.

Table 1. Factors Motivating the Adoption of Risk-based Supervision

Supervisory Structure	Supervisory Efficiency	Market Developments	Others
Change in the organization of regulatory agencies	Continuing attempts to resolve the mismatch between the large number of funds and the limited supply of supervisory resources (both people and powers)	A small number of failures among funds	Regulatory concern about incomplete compliance with conduct rules and poor governance practices, particularly among small and medium-sized funds
Move to integrated authority	Resource efficiency	Reaction to market corrections (and impact on pension funds) around the millennium	Way to improve internal risk-management and governance of pension funds themselves
Application of risk-based supervision to pensions as well as other financial sectors	Increase consistency of supervisory action	Low return environment	Coming into line with international best practice
	Proactive approach – dealing with problems before they arise	Avoid distortion of competition by applying equal rules for equal risks across financial sectors	
	Promote confidence in pension and financial system as a whole		

Source: World Bank (See Brunner et al, 2008)
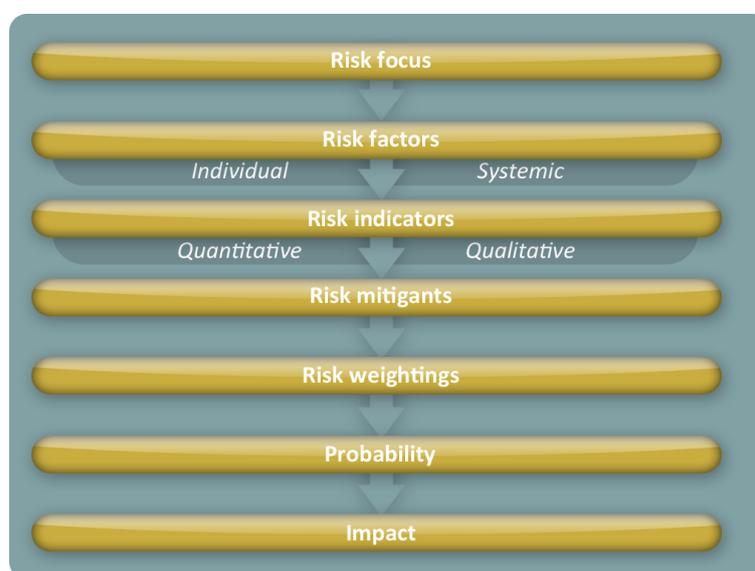
3. How to Apply Risk-based Supervision

In terms of applying a risk-based supervision framework, the process can be broken down into the following steps:[11]

1) ***Establishing the objectives of the pension supervisory authority and consequently its risk focus:*** a risk-based approach requires the supervisory authority itself to be explicit about what types of risk it will focus its resources on and which areas and institutions to which it will allocate less priority. This will be shaped by the authority's budget and resources, its statutory objectives, the nature of the pension system (mandatory vs. voluntary etc.), and the risk appetite of the supervisory authority (which is influenced by political pressures etc.).

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[11] This grouping of key design issues is not unique to pension fund supervision – it is common to all risk-based supervisory frameworks.

2) ***Identifying the risks faced by individual funds and the pension industry that bear on the pension supervisory authority's objectives:*** the supervisory authority then has to identify what risks could lead to a failure of its objectives and how these risks are correlated. These are usually formulated in standard categories such as investment risk; credit risk; liquidity risk; operational risk; IT risk; strategic and legal risk; reputational risk etc.[12] Systemic risks impacting the pension sector as a whole will also be considered. The supervisory authority then needs to articulate the different indicators (both quantitative and qualitative) it will use to identify and measure these risks. The authority will also consider how well these risks are managed - *i.e.* the risk mitigants in place - as risk is usually considered on a *net* rather than a *gross* basis.

3) ***Establishing a methodology for mapping and weighting risks faced to the authority's objectives:*** this involves weighting the different risks according to their importance, establishing the probability of an adverse event and its likely impact. Quantitative and qualitative assessments will form part of the supervisor's judgement.

4) ***Establishing a quality assurance process:*** as a risk-based approach relies more heavily on subjective judgements by supervisory staff, a process of 'quality control' needs to be introduced, balancing central control and supervisory discretion to ensure consistency of approach.

5) ***Establishing a methodology for allocating supervisory resources based on the risk assessments:*** supervised entities are grouped into response categories within a matrix (for 'low'/'high' supervisory attention), based on how much risk they are thought to pose. The supervisor should also have an established policy for adapting and escalating its supervisory response. Guidance and education to help alleviate systemic risks will also be drawn up as required.
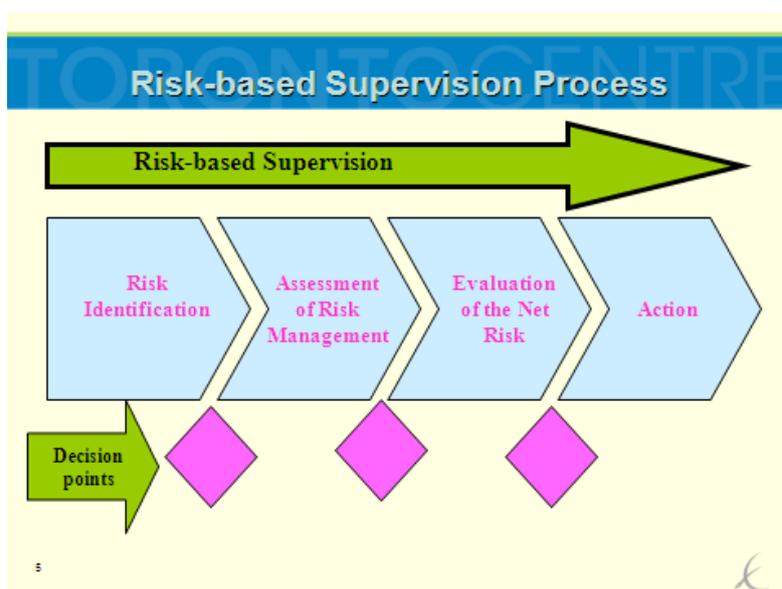
Figure 3. Steps in Risk-based Supervision Process
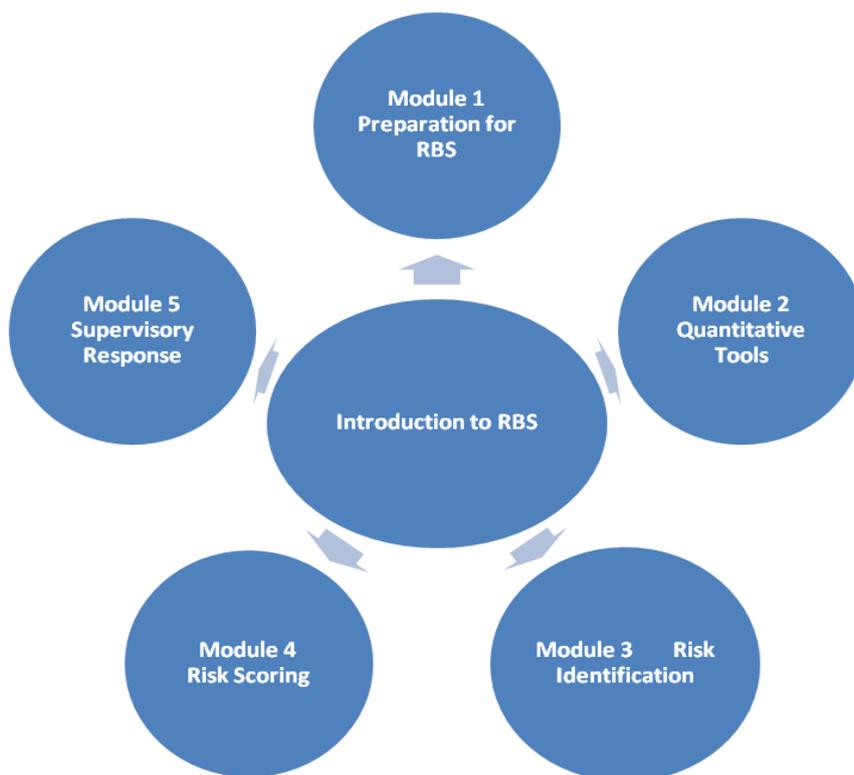

Source: IOPS Secretariat

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[12] In Module 3 of the IOPS Toolkit a list of possible risk factors to include in a risk assessment is provided and is designed as a check to help supervisors devising their models.
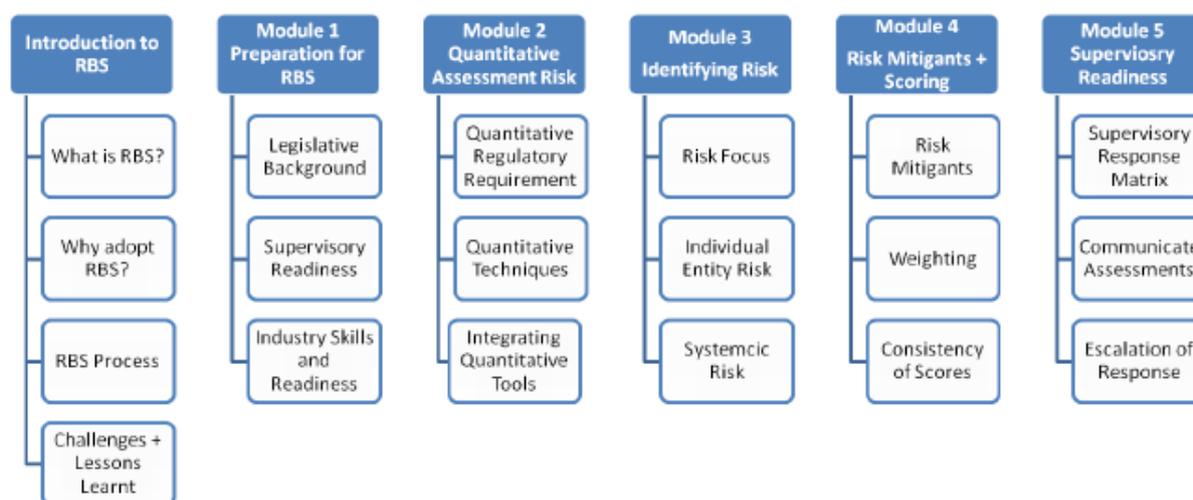
Figure 4. Decision Points in RBS Process

Source: Toronto Centre - '*Implementing Risk-based Supervision: Leadership and Management Challenges'* - presentation given by Michael Hafeman, Regional Insurance Leadership Program, April 19-24, 2009, Johannesburg, South Africa

A more in-depth review of the steps and the many issues involved are developed in the later Modules of the IOPS Toolkit (steps 1-2 are covered in Module 3 '*Identifying Risks'*, whilst steps 3-4 are covered in Module 4 '*Risk Mitigation and Scoring'* and 5 is covered in Module 5 '*Supervisory Response'*).

The headings of these steps alone should be sufficient to establish that there are many potentially different shapes that a RBS framework may take - depending on decisions about the way in which pension industry risks affect supervisory objectives, weighting methodologies, and so on. Even the identification of pension industry risks (covered in Module 3 of the IOPS Toolkit), which has a high level of commonality among authorities using a risk-based methodology, can vary. Each supervisory authority will have to develop a model which fits its own structure and resources, the type of pension system it is overseeing and the nature and level of development of the pension industry. The country case studies included in this Toolkit are designed to provide examples of how different IOPS members have adapted a risk-based approach to their own particular circumstances.

One misconception is that risk-based supervision is simply a model designed to come up with a 'risk score' for each entity which the supervisory authority oversees. However - as these steps hopefully show – risk-based supervision is a much broader approach and philosophy. Indeed it would be impossible for authorities overseeing thousands of pension funds to come up with an individual risk score for each institution. However, this does not stop them developing a broad risk-based framework for allocating their resources (for example see United Kingdom country case study).

4. The Challenges Posed by Risk-based Supervision and Lessons Learnt

Before embarking on this Toolkit and applying risk-based supervision to the new field of pensions, it is worth standing back and reflecting on what has been learnt from the experience of others – in non-financial, other financial and the pensions field. The Toolkit will try to take these lessons into account, and discuss them further in later sections. [13]

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[13] See also (Hutter 2005).

Challenges

Experience from other financial sectors, and from IOPS members' own experience shows that – though worth doing - introducing RBS is not a simple process. An RBS approach requires different levels of skill and judgement than a rules-based approach, including sophisticated methodology (involving IT systems which may be expensive to introduce and complex to use).Consultants who have worked on introducing RBS for other financial sectors note that common pitfalls can include not preparing a supervisory strategy; not clearly defining specialist assistance needed; not comparing actual to planned resources; the frequency or depth of the review not reflecting the level of risk or significant activities of the entity overseen etc.[14]

Black's paper[15] also highlights some of the main challenges which are of key relevance for those seeking to introduce risk-based frameworks:

- *Combining simplicity with complexity* –the challenge of designing a system which is sufficiently complex to be able to capture and assess a wide range of risks at the firm specific and generic level and which can operate across a widely varying regulated population, and yet be simple enough to be understood used on a day to day basis by inspectors and supervisors.

- *Knowledge and data* – getting the right data (both for individual firms and identifying system-wide and external environment risks), and making better use of the knowledge the authority has is a critical challenge.

- *Ensuring that assessments of firms are forward looking* – how to go beyond only capturing the risks apparent today to what might happen in future.

- *Going beyond the individual firm in assessing risk* – how to incorporate industry wide risk assessments into the firm-specific assessment, and how to compare risks across the whole of the supervisor's portfolio of overseen entities.

- *Structure and operation of internal risk governance processes* – how to balance the need for organisational structures to ensure the accuracy and consistency of assessments with speed and responsiveness (*i.e.* how to balance central direction – ensuring consistency -with individual supervisors' flexibility and judgement).

- *Changing the culture to embed the risk-based approach across the whole organisation* – it can take years for both senior management and individual supervisors to really incorporate a risk-based approach into the heart of their work.

- *Managing blame* – this is important when a 'non-zero failure' policy is adopted, as problems will occur and the supervisor therefore have to have the confidence to apply a different approach to 'low risk areas'.

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[14]Taken from '*Implementing Risk-based Supervision: Leadership and Management Challenges*' - presentation given by Michael Hafeman, Regional Insurance Leadership Program, April 19-24, 2009, Johannesburg, South Africa.

[15] Black (2008) Section 4 p.40

- *Making resources follow risks* –how to allocate between high risk firms, how lightly to supervise low risk ones, how to manage the gap between planning and risk identification and how to manage politically important risks are all challenging issues which need consideration.

Lessons learned

The IOPS has attempted to draw lessons from those supervisory authorities which have already applied risk-based supervision to the pension sector. All felt that the process was worthwhile, but that if they could go back and start again they would do things differently. Suggestions, taken from the IOPS Working Paper No.4 (IOPS 2007) and from Working Paper No. 9 (IOPS 2009),[16] to help pension supervisory authorities move towards a RBS approach whilst avoiding some of these pitfalls include:

- *Adaptation of Models:* consult widely and adapt RBS models from other supervisory authorities or sectors carefully, building in flexibility to allow for upgrades and testing on a pilot basis.

- *Application of Models*: extreme market moves can reveal weaknesses in the financial models used by pension funds and by regulators themselves, which often do not sufficiently consider 'tail risks.' Risk-based supervisors therefore need to be more aware of not only the strengths, but also the weaknesses of any models which they use, and to consider how the results of such models are built into their overall risk-analysis. As argued in Module 2, quantitative analysis alone can never replace sound supervisory judgement.

- *Data Collection:*[17] use existing data where possible, but make sure the authority has the power to collect additional information. Roll out data collection in stages (large funds first) and explain why it is being collected and to what use it will be put. Cut down the amount of unnecessary or low level data and try to collect more useable data rather than having funds file everything they've got. Some entities might welcome more standardised filing, especially electronically. Make sure that the scope and scale of the information collected is appropriate for the type of pension system being overseen.

- *Independence of Supervisory Body:* make sure that pension supervisory is not unduly swayed by external pressures and can therefore act with credibility and authority;

- *Reorganisation of the Supervisory Body:* do not underestimate the amount of change required; allow plenty of lead time and build in new structures gradually, allowing time to adapt, if possible rolling out RBS at the same time as other pension reforms.

- *Staff:* make sure training is provided (on an on-going basis) for *all* staff on the philosophy of RBS as well as the process. Rearrange internal staff, and use international expertise and experience from other sectors.

- *Industry:* explain RBS externally (via guidance notes, informal discussion, road shows etc.). Make sure that the supervisory process places sufficient attention on the risk-management

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[16] See also (Impavido and Tower 2009), (World Bank 2009) and (Black 2008a Section 4 p40)

[17] See IOPS Working Paper 13 (IOPS 2010b)

systems of the pension funds themselves (particularly those investing in alternative investments and using derivatives).

- *Powers:* make sure the authority has the necessary (flexible) powers before embarking on RBS.

- *Risk-based solvency*: risk-based supervisors needed to be flexible in their supervisory approach during high volatile periods to prevent the rigid application of quantitative rules making solvency situations worse and impacting on financial markets in turn. Counter-cyclical funding rules should be considered.

- *Systemic risk*: 'contagion channels' between financial sectors and between the financial sector and the real economy need to be monitored. Risk-based supervisors need to build such macroeconomic, systemic considerations into their overall analysis.[18] Systemic risks facing DC pensions also need to be given suitable consideration (including ensuring that the long-term nature of such savings is promoted when members are facing short-term losses and checking that ways to protect members close to retirement from such losses are in place). Supervisory authorities should try to use system-wide responses where possible (such as education and guidance).

- *Think in terms of achievability* -recognise that resources are likely to be inadequate to adopt an intensive inspection policy even for high risks so think in terms of where are those inspection resources likely to make the biggest difference, and explore alternative strategies to inspections for influencing behaviour – including education and guidance.

- *It is worth doing* – risk-based supervision provides an explicit framework for organising the supervisory authority's assessments and responses. Risk-based frameworks can produce resource savings, help to set outcomes and provide a framework for analysing problems or new developments. They can also be used to help set objectives within firms by providing them with benchmarks, and can provide a common language for discussion with firms' senior management. Whatever the challenges and level of development, for a given level of resources, a well-applied system of RBS will always be more efficient and manage risk better than a more traditional, rules-based approach.

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[18]See Module 3 of the IOPS Toolkit for further discussion. For a discussion of the impact of systemic risk on pension funds see (Besar et al 2009).

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